PROJECT REPORT

USABILITY ANALYSIS OF STABLE DIFFUSION-BASED GENERATIVE MODEL FOR ENRICHING BATIK BAKARAN PATTERN SYNTHESIS

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ABSTRACT

The rapid development of technology today helps us in various fields of work. One of the fields that can utilize technology in helping their work is batik. Utilizing Deep Learning to manage data in the form of batik pattern images and typical bakaran batik patterns using the Generative Model method, namely Stable Diffusion which aims to produce better and more detailed batik pattern images by maintaining the original pattern of batik patterns and typical bakaran batik patterns. This research only uses datasets in the form of batik pattern images and typical bakaran batik patterns. The image data is processed augmentation first by performing the inverse on the image, resizing the image to 512x512, then randomly rotating the image, performing a random horizontal flip on the image, and performing the inverse again on the image. Pre-Training on image data to find the right parameters and conditions used in the training process. The result of this research is that the Stable Diffusion model version 1.4 and version 2.1 show good performance in processing and creating batik pattern images and batik patterns typical of Bakaran. In this study, the score calculation process for Stable Diffusion version 1.4 and version 2.1 was carried out using Inception Score and CLIP Score to calculate the images generated from the two versions. In the calculation using CLIP Score, the results obtained by version 1.4 are higher than version 2.1 for the same reason as Inception Score because the image produced by version 1.4 is more abstract. Of the two versions used is version 1.4 because the resulting image shows an abstract image that reflects a good batik pattern. Then, the version used to process batik patterns and batik patterns typical of Bakaran is Stable Diffusion version 1.4 which shows excellent performance in processing batik pattern images. The results of Stable Diffusion version 1.4 show good and abstract batik patterns in accordance with the characteristics of Bakaran batik.

Keywords: Stable Diffusion, Generative Model, batik patterns and batik patterns typical of Bakaran, Deep Learning.